

As explained in the specification of Erickson, impeller 40 and diffuser 41 circulate lubricant for removing water that leaks into the upper end of motor 10 and gravitates downward. The water will flow downward along with the circulating lubricant and be pumped down passage 24 into bellows 33. Filter 51 is of hygroscopic material for removing the water as the lubricant flows back upward.

Although some of the oil does flow out passage 11b to lubricate bearing 12, applicants submit that the pressure is not sufficient to create a fluid film between shaft 11 and bearing 12 to prevent contact of shaft 11 with bearing 12. A declaration under Rule 132 by Mark James is attached. Mr. James has many years of experience in submersible pump and motor mechanical design and is of the opinion that the single stage impeller 40 and diffuser 41 would not be adequate to produce a liquid film between bearing 12 and shaft 11. It is also Mr. James' opinion that the single pump stage of Erickson would not produce a lubricant pressure of 30 psi.

Claim 1 as amended requires a motor adapted to be filled and sealed with lubricant. It requires a plurality of pump stages in the housing, with a flow passage leading from the lubricant pump stages to the bearing for applying sufficient pressure to the lubricant to induce a film of lubricant between the bearing and shaft. Erickson discloses only a single pump stage in the motor, thus does not meet this requirement in claim 1. Furthermore, the single stage would not create a fluid film between the bearing and shaft according to Mr. James.

Applicants also submit that it would not be obvious to one skilled in the art as of the filing date of this application to utilize a plurality of pump stages in the motor of Erickson in view of Guardiani. Guardiani deals with a motor that has a pair of stages, however these stages pump the exterior working fluid, which is radioactive liquid waste, and are located exterior of the

motor. The stator is located within a sealed can 45 and the rotor is located within a sealed can 49. Impellers 67, 69 do not pump any lubricant sealed within the cans 45, 49 as required by the claim. Rather the impeller 67, 69 pump waste water up discharge tube 135 and out outlet 214. Some of the waste water does flow past bearings 71, 73 and 85. Apparently the pressure is adequate to achieve a fluid film between the bearing 71, 73, as mentioned at column 8, lines 48-49 as well as cooling them. However, the fluid for the fluid film is pumped from the main waste water pump stages 67, 69, not from any pump stages located within any lubricant within the motor.

Erickson's motor is attached to a centrifugal pump (not shown) that pumps the working fluid, which is well fluid. Erickson utilizes impeller 40 and diffuser 41 to circulate the lubricant within the sealed interior of the motor. One viewing Erickson would not look to Guardiani for any solutions concerning lubricant circulation because Guardiani teaches to circulate a portion of the waste water to the bearings from the external pump stages. This design is substantially different from Erickson, which teaches to remove any water droplets that encroach into the lubricant within the interior of the motor. Combining Erickson with Guardiani would teach one to utilize at least two of the pump stages of the main well pump exterior of the motor, and to divert some of the pressure of the well fluid through the bearings in the motor. This would be completely adverse to the purpose of Erickson, which is to remove any water from the oil. Erickson definitely would not want to pump any of the well fluid into the bearings within the motor housing, because generally the well fluid contains a large percentage of water.

Guardiani does not disclose the invention as claimed in claim 1. Claim 1 requires a housing that is adapted to be filled and sealed with lubricant. Claim 1 requires a plurality of pump stages within the housing for pumping lubricant to the bearings. Guardiani, on the other

hand teaches pumps located on the exterior that pump a portion of the working fluid to the bearings.

Carle was cited for the purpose of a lubricant circulating impeller 27 that pumps in a downward direction as shown in Figure 3C. Carle does not show a complete pump stage, which includes a diffuser, rather shows only an impeller. Erickson also shows discharging in a downward direction through passage 23.

Claim 2 requires that the pump stages have a combined capacity to produce at least 30 psi pressure in the lubricant. As set forth in the Mark James declaration, the pump stage of Erickson would not produce at least 30 psi. While the pump stages of Guardiani might produce at least 30 psi, they are not located within a housing that is sealed and filled with lubricant.

Claim 3 depends from claim 1, and requires that each of the diffusers have a plurality of passages that extend downstream and inward to a central intake of one of the impellers. In the preferred embodiment of this application, passages 47 of upstream diffuser 39 (Fig. 2) are located upstream of the central intake of first impeller 35. This is not shown in Erickson. In Erickson, diffuser 41 is shown with a single central entry 41a. The fluid flows through the central entry 41a into impeller 40. The fluid is discharged out the passages of impeller 40 into an inward directed diffuser passage. There are no passages in diffuser 41 that lead downstream and inward to the central intake.

Claim 4 depends from claim 1 and requires the same elements as claim 3. In addition it requires that one of the impellers discharges lubricant into a chamber in the housing without flowing through any of the passages of any of the diffusers. Again, this is not shown in Erickson. In Erickson, diffuser 40 has a passage or passages that are located downstream, which is the

downward direction in the drawing, of the tips of impeller 40. The discharge from the tips of impeller 40 thus flows downward and inward through passages of impeller 40 before discharging into discharge chamber 18. In applicants' preferred embodiment, as shown in Figure 2, the downstream impeller 37 discharges directly into chamber 42 and does not flow through any of the passages 47 or 49 of either diffuser 39 or 41.

Moreover, the features of claims 3 or 4 are not shown in Guardiani or Carle. Carle does not show a diffuser. Referring to Figure 3C of Guardiani, fluid flows first upward into a central intake of impeller 69. The fluid does not first flow through passages of a diffuser inward to the intake of impeller 69 as required by claims 3 and 4. The first diffuser 99 is located upstream of impeller 69. This requirement of claims 3 and 4 is not suggested in any of the references.

Claim 5 depends from claim 1, thus should be allowed. Claim 6 depends from claim 1 and requires that the chamber be fixed in volume. In Erickson, the chamber is variable in volume as it is the interior of bellows 33.

Claim 7 requires first and second centrifugal pump stages located within a chamber of the housing. It requires that the housing be adapted to be filled and sealed with lubricant. As previously discussed, Erickson shows only a single stage and does not suggest adding an additional stage. Since Erickson does not recognize a desirability of having a fluid film in its bearings, Erickson would have no need to employ a second stage in order to achieve the fluid film. A single stage provides ample pressure for circulation to remove encroaching water, which is the objective of Erickson. While Guardiani shows two stages, Guardiani teaches to pump a portion of the waste water through the bearings, which teaches away from Erickson's purpose of removing any water from the motor housing.

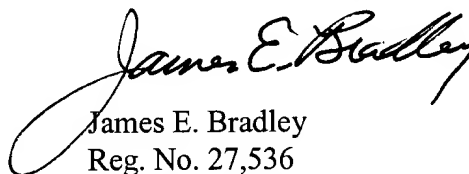
Claim 8 depends from claim 7, requiring that the first and second pump stages have a combined capacity to pressurize the lubricant to at least 30 psi. This is not suggested by Erickson. Erickson does not suggest the desirability of a lubricant film within the bearings, thus would have no reason to achieve this higher level of pressure.

Claim 9 depends from claim 7, and requires a lubricant reservoir of fixed volume within the chamber. This is not met by the flexible bellows of Erickson.

Claim 12 requires pumping lubricant within a sealed motor housing at a pressure sufficient to induce a film of lubricant between the shaft and the bearing to prevent the shaft from contacting the bearing. As discussed above, Erickson does not suggest this requirement. It would not be obvious to combine Guardiani's teaching, and even if combined, the combination would teach away from Erickson's result of removing water from the bearings. Claim 13 depends from claim 12, requiring a lubricant pressure of 30 psi. Claim 14 depends from claim 12, specifying a plurality of pump stages within the housing.

Applicants respectfully submit that the claims are now in condition for allowance and respectfully request reconsideration.

Respectfully submitted,



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